Building a Virtual Lab with Active Directory - oscorp.local

Overview
This customized guide walks you through building a complete **Windows Server 2022 Active Directory** environment using Oracle VirtualBox. You will simulate an enterprise network infrastructure in an isolated lab environment using a domain named **oscorp.local**.

By the end of this lab, you will have:

- A Windows Server 2022 Domain Controller (**OsCorp-ADC**)
- A Windows 11 Enterprise Client (**OC-AdminPC**) joined to the domain oscorp.local
- Configured DHCP for automatic IP assignment (**192.168.2.0/24**)
- Configured Group Policy to apply a desktop wallpaper.

Lab Objectives

- VirtualBox setup with internal networking
- Windows Server 2022 installation and promotion to Domain Controller
- Active Directory and DNS configuration
- DHCP server setup with exclusions
- Windows 11 client domain join
- Group Policy Object (GPO) deployment for user experience.

Network Plan

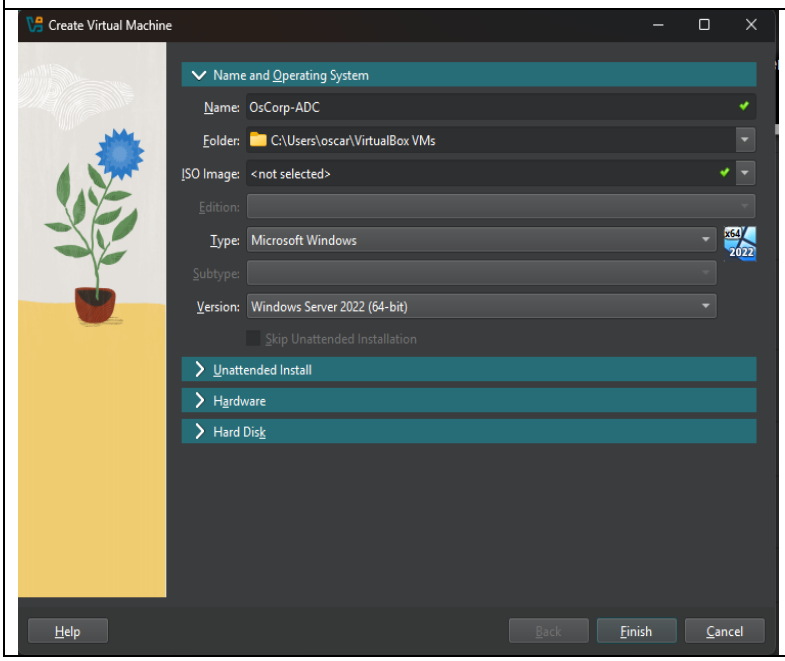
- Network: 192.168.2.0/24
- Static IP Range: 192.168.2.1 – 192.168.2.100
    - Domain Controller (OsCorp-ADC): 192.168.2.10
- DHCP Range: 192.168.2.101 – 192.168.2.200
- DNS: 192.168.2.10

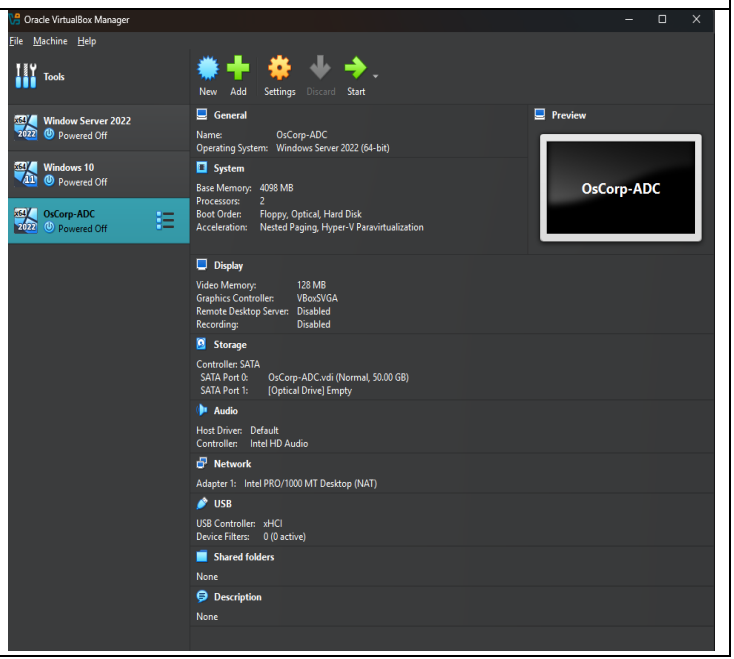
Virtual Machines

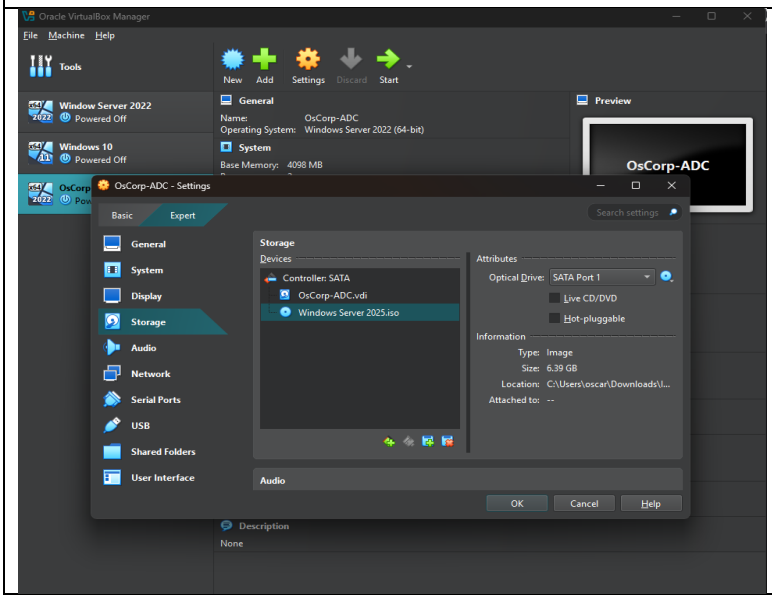
- **OsCorp-ADC**: Windows Server 2022
- **OC-AdminPC:** Windows 11 Enterprise

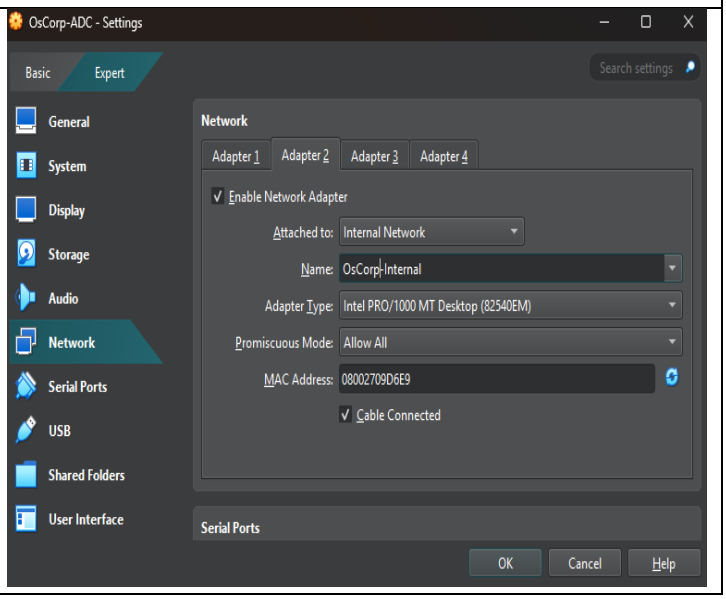
Steps Summary

1. Creating Virtual Machines in VirtualBox
    - Set Adapter 1: NAT
    - Set Adapter 2: Internal Network (Name it: **OsCorp-Internal**)

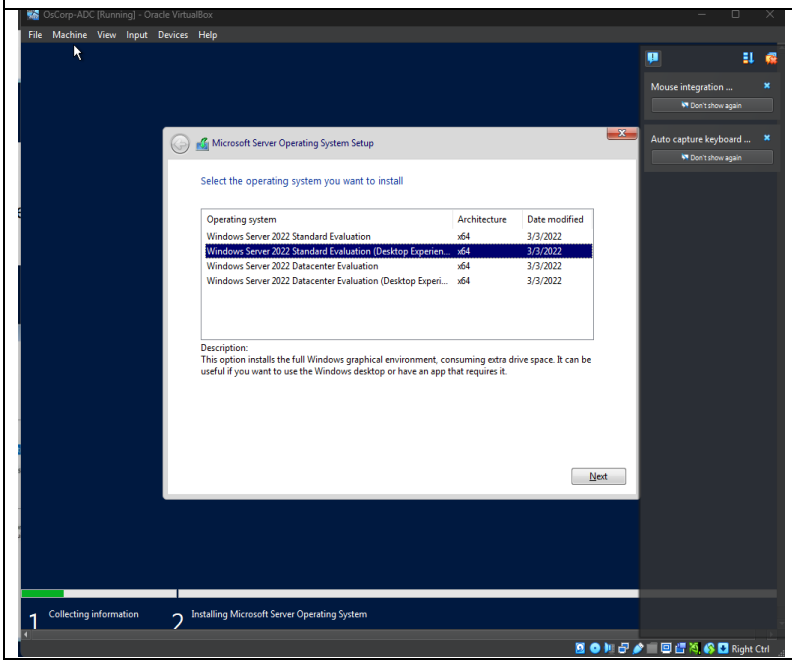


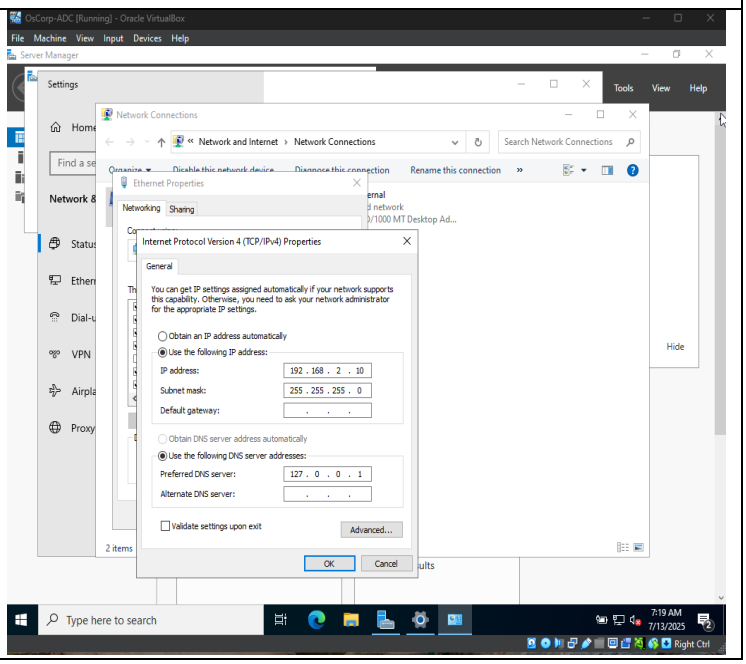


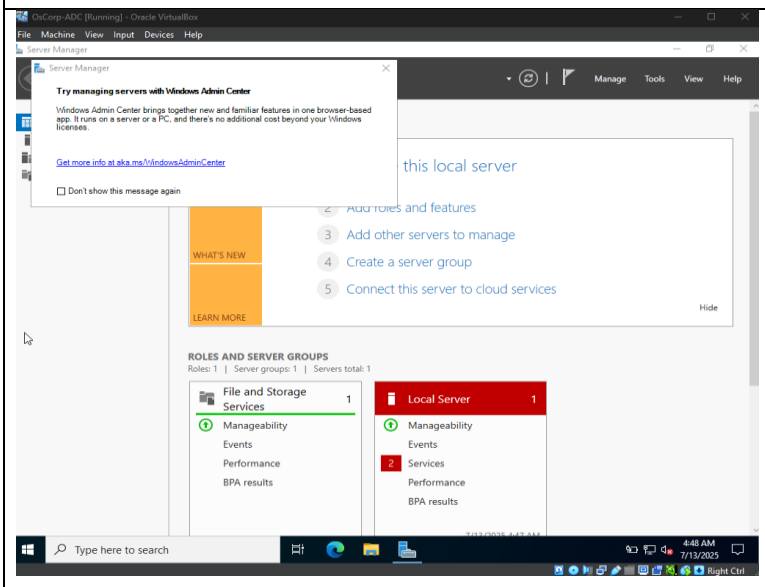


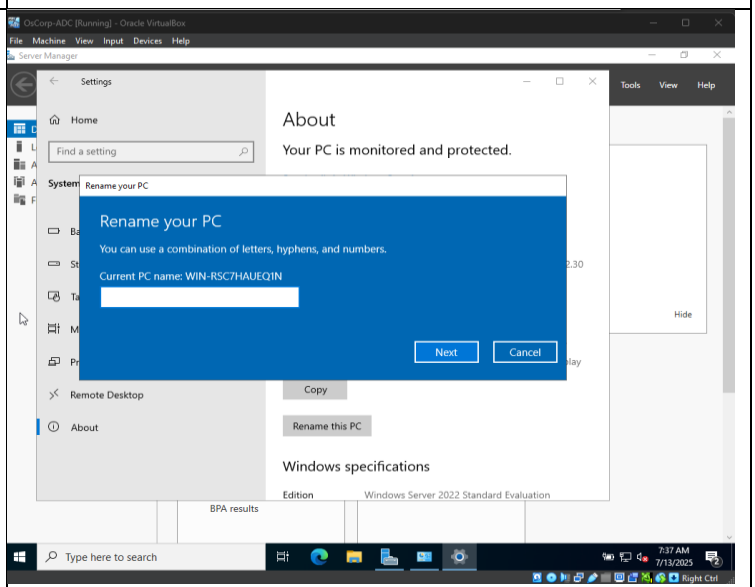


2. Install Windows Server 2022 on **OsCorp-ADC**
    - Assign static IP: 192.168.2.10
    - Rename the server: **OsCorp-ADC**

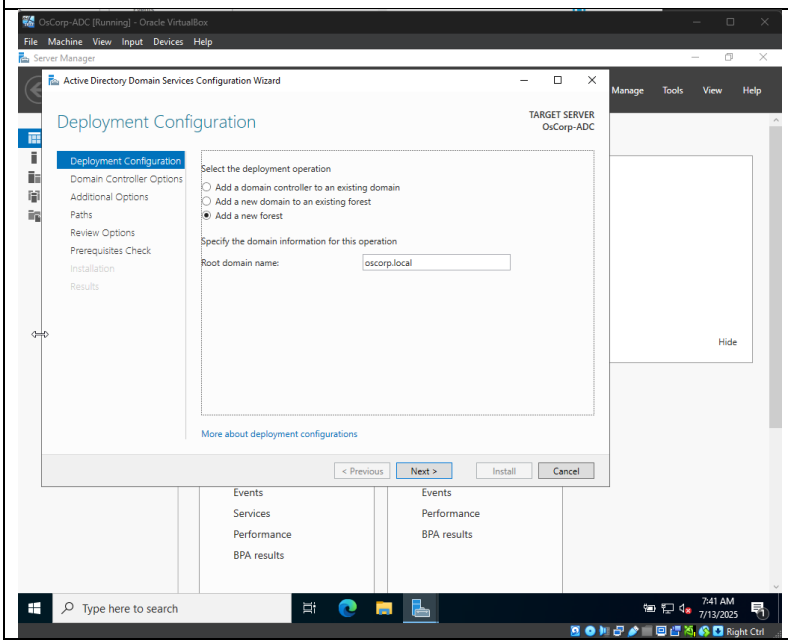


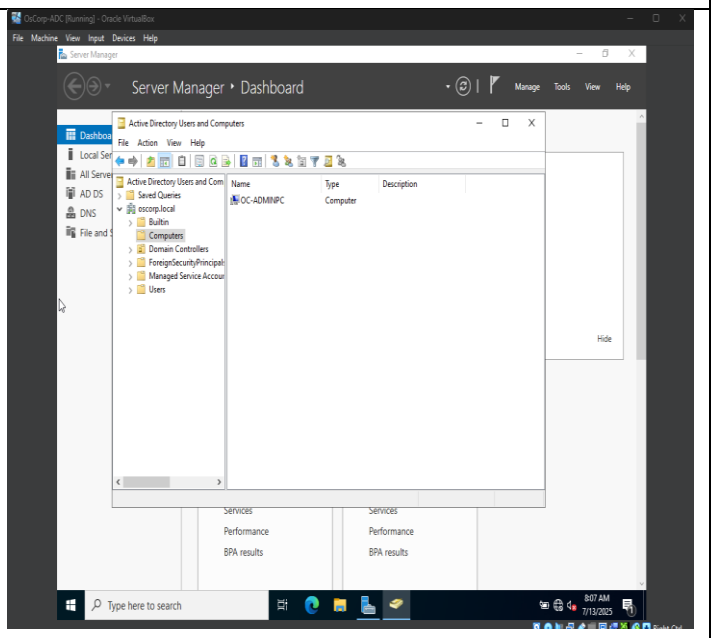




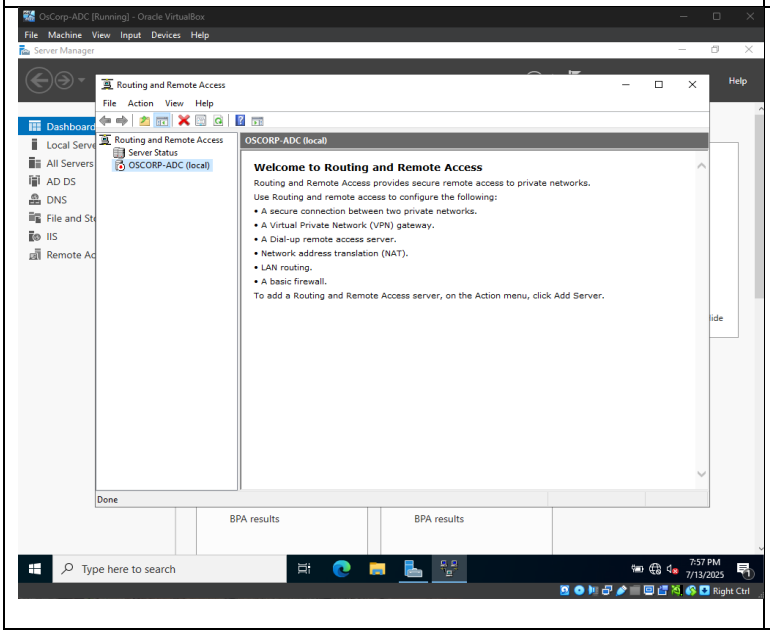


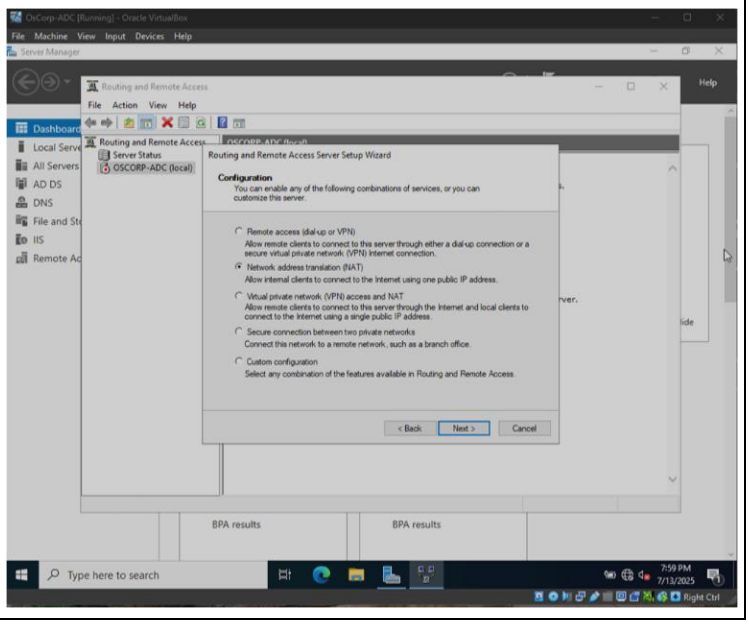
3. Install AD DS & Promote Server to Domain Controller
    - Domain: oscorp.local
    - Reboot and verify AD installation.

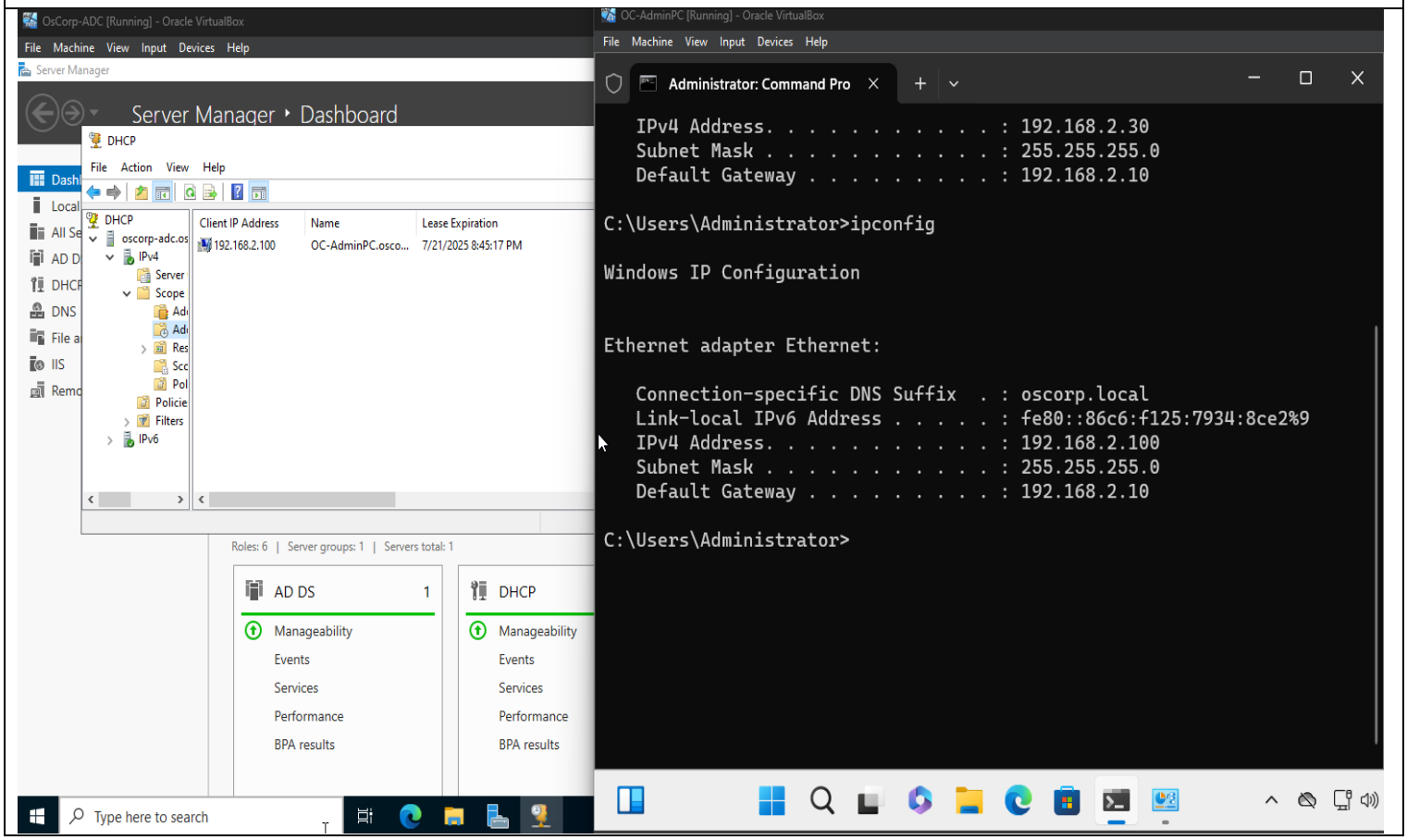




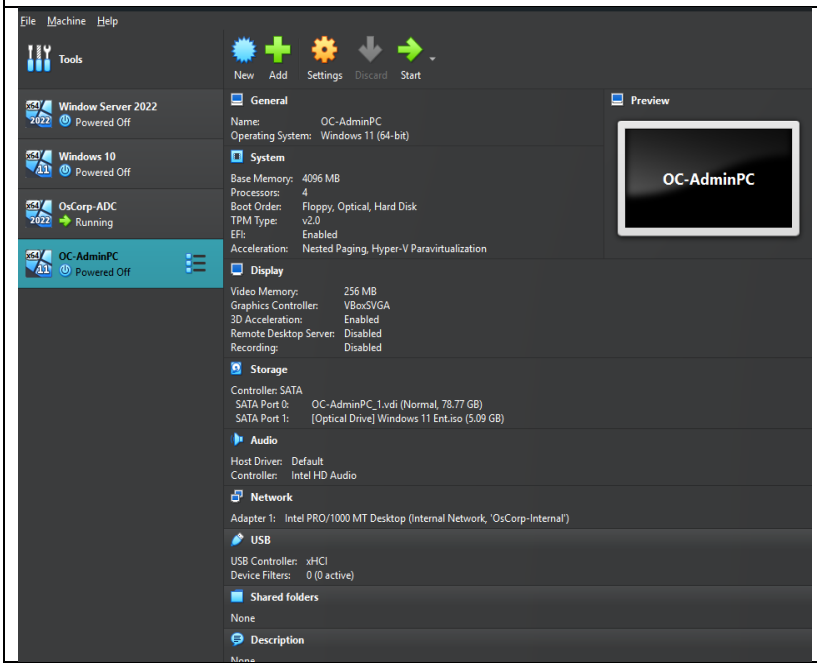
4. Install and Configure DHCP
    - Scope: 192.168.2.101 – 192.168.2.200
    - Exclude: 192.168.2.1 – 192.168.2.100

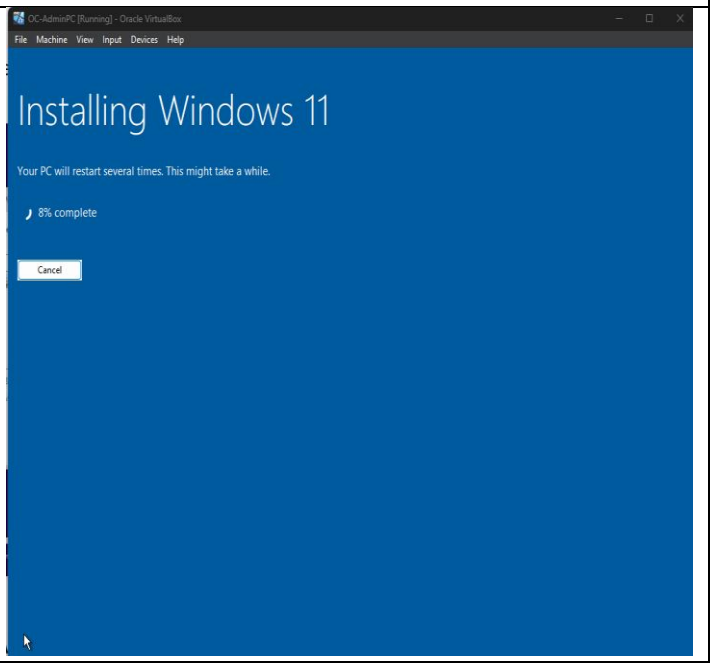


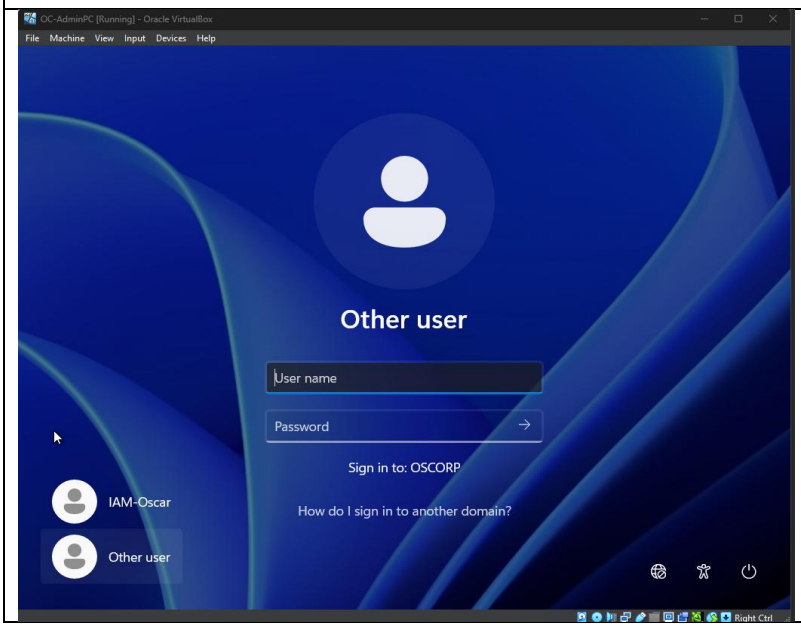


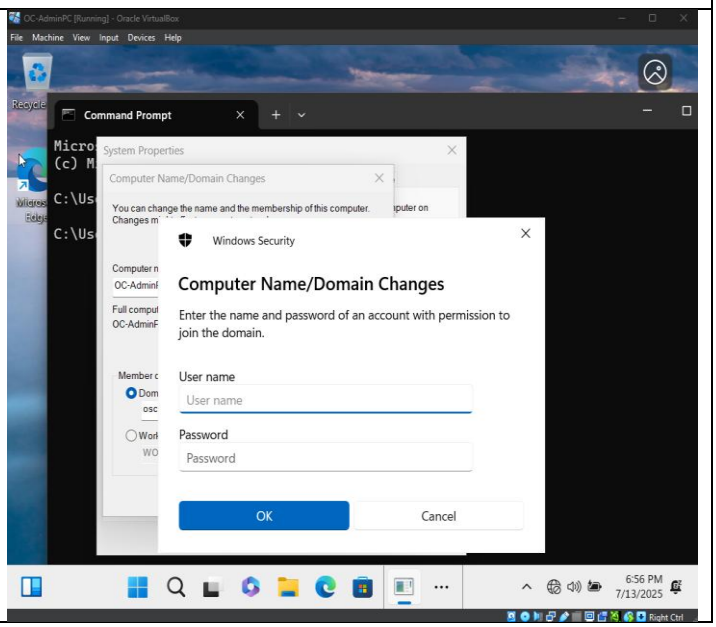


5. Create Shared Folder for Wallpaper
    - Share wallpaper and set permissions to "Everyone: Read."
6. Create GPO to Set Desktop Wallpaper
    - Link GPO to domain.
    - Use gpupdate /force on **OC-AdminPC**
7. Configure Windows 11 Client (**OC-AdminPC**)
    - Set DNS to 192.168.2.10
    - Join domain: oscorp.local
    - Reboot and log in with domain credentials.


File Machine Help
Tools
New Add Settings Discard Start
Window Server 2022
Powered Off
Windows 10
Powered Off
OsCorp-ADC
Running
OC-AdminPC
Powered Off
General
Name: OC-AdminPC
Operating System: Windows 11 (64-bit)
System
Base Memory: 4096 MB
Processors: 4
Boot Order: Floppy, Optical, Hard Disk
TPM Type: v2.0
EFI: Enabled
Acceleration: Nested Paging, Hyper-V Paravirtualization
Display
Video Memory: 256 MB
Graphics Controller: VBoxSVGA
3D Acceleration: Enabled
Remote Desktop Server: Disabled
Recording: Disabled
Storage
Controller: SATA
SATA Port 0: OC-AdminPC_1.vdi (Normal, 78.77 GB)
SATA Port 1: [Optical Drive] Windows 11 Ent.iso (5.09 GB)
Audio
Host Driver: Default
Controller: Intel HD Audio
Network
Adapter 1: Intel PRO/1000 MT Desktop (Internal Network, 'OsCorp-Internal')
USB
USB Controller: xHCI
Device Filters: 0 (0 active)
Shared folders
None
Description
Preview
OC-AdminPC


OC-AdminPC [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Installing Windows 11
Your PC will restart several times. This might take a while.
8% complete
Cancel


OC-AdminPC [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Other user
User name
Password
Sign in to: OSCORP
How do I sign in to another domain?
IAM-Oscar
Other user
Right Ctrl


OC-AdminPC [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Recycle Bin
Command Prompt
System Properties
Computer Name/Domain Changes
You can change the name and the membership of this computer.
Windows Security
Computer Name/Domain Changes
Enter the name and password of an account with permission to join the domain.
User name
Password
OK
Cancel
6:56 PM
7/13/2025
Right Ctrl

Testing & Verification

- Use ping oscorp.local and nslookup for name resolution.
- Use ipconfig /all to verify DHCP assignment.
- Confirm wallpaper policy is applied via GPO.

Learning Outcomes

- Understanding of on-premises identity management
- DHCP and DNS configuration for enterprise environments
- AD domain join troubleshooting.
- GPO fundamentals and testing

Future Enhancements

- Add second DC for redundancy.
- Enable NAT routing for internet on client.
- Deploy more GPO policies for security and compliance.
- Add user account management and OUs.

Disclaimer

This lab is for educational purposes only. Hardening and security controls are required before any production use.

References

- Microsoft Learn: https://learn.microsoft.com
- Group Policy Settings: https://learn.microsoft.com/en-us/windows-server/administration/windows-commands/gpupdate
- DHCP Configuration: https://learn.microsoft.com/en-us/windows-server/networking/technologies/dhcp/dhcp-deploy-wps
- ChatGPT for guidance - https://chatgpt.com/